

Chip Seals in Their Many Forms

In the world of pavement preservation, some of the tools have narrower application and some are pretty versatile. Chip seals are one of the tools that can serve a wide range of pavement distress conditions.

Chip seal is one or more layers of aggregate embedded in asphalt binder (hot or emulsion). They can stop surface raveling and oxidation, seal minor cracks, provide a skid-resistant wearing surface, and retard further deterioration of the surface. Depending upon the application type, a chip seal can extend the life of the pavement by 5-7 years or more and traffic can usually be restored within an hour or two of application.



How chip seal is applied has changed quite a bit. Back in the day (which, yes, was a Wednesday), many of us knew it as tar and chip. It was an apt name back then. The binder was not much more sophisticated than coal tar and we trickled a lot of dusty stone off the tailgate edge of a dump truck. Buick station wagons set the stone to some degree and picked up the excess tar for us.

Those folks back then wouldn't know what to make of today's chip seal process. These days, we apply highly engineered asphalt binders from distributor trucks with calibrated nozzle bars controlled by computers in the cab that would laugh at the ones that controlled the Apollo launches. We select the stone like a hopeful groom picking out a ring, examining the cut and angularity and yes, even the color. Dust? No, we have little tolerance for dust in our chip. And, of course, we have come to understand the importance of setting that stone just so with the right pneumatic roller passes, taking care to not overwork the surface. When we see that familiar salt and pepper surface, we know it's balanced about right.



And chip seal plays well with others (you can see some examples on our YouTube channel). Sure, it can stand by itself and often does. The Delaware Department of Transportation (DelDOT) often applies a [single shot](#) of chip seal to extend the life of the roadway. Other agencies are fond of a [double shot](#), usually with two different binder and chip recipes, and some will even use three shots. Chip seals are often preceded by crack sealing and sometimes followed with [slurry seal](#) or microsurfacing (sometimes called a Cape seal). It can be a short-term or even long-term surface treatment after full-depth reclamation and other remediation techniques.

The expectation in most instances is for a chip seal to last 5-7 years, but we examined one [application](#) after nine years and it is going strong. Granted, that application utilized a geotextile under a double shot of [chip](#), but that just reinforces the many ways you can use the tool.

In short, it is a versatile pavement preservation tool. The Pavement Preservation & Recycling Alliance (PPRA) provides a great deal of information about chip seals and other tools in their [Treatment Resource Center](#) and you can also observe a lot of best practices in the many projects we have been lucky enough to film, some of which are linked above.

The Delaware T2/LTAP Center's Municipal Engineering Circuit Rider is intended to provide technical assistance and training to local agencies and so if you need help pavement preservation or other transportation issues, contact Matt Carter at matheu@udel.edu or (302) 831-7236.

